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Farm Animal Waste and The Clean Water Dilemma

How America's Diet Style is Destroying its Ground Water

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Nationwide, 130 times more animal waste is produced than human waste—five tons of it per person—making individual livestock operations the waste equivalent of a major city. A 50,000-acre swine operation, for example, in southwest Utah—which has been designed to produce 2.5 million hogs each year—has a potential waste output greater than the entire city of Los Angeles.

Due to a lack of sufficient land in which to handle the waste produced by America's livestock animals, the U.S. Department of Agriculture has recently described the animal waste issue as "a serious policy problem." Further, the Environmental Protection Agency has identified more than 60 rivers and streams as "impaired" due to the waste runoff from agricultural uses. The largest contributor to this pollution is animal waste—from the factory farms and feedlots producing the nearly nine billion animals raised for food each year.

Public concerns about nutrient enrichment of waterways have also been heightened by toxic algae and microbes in recent years: three people dead and 100 sick in Canada; 162 dolphins, a sea lion and at least four whales dead in Mexico; thousands of tropical fish dead off Florida; 304 dead manatees in Florida; hundreds of brown pelicans dead in California. In the Gulf of Mexico, nutrients from farm runoff—including animal waste—are linked to the formation of a so-called "dead zone" of hypoxia (low oxygen) in the Gulf as large as 7,000 square miles.

The estimated annual U.S. manure production (1997) piles up like this: Cattle 1,229,190,000 tons; hogs 116,652,300; chickens 14,394,000; turkeys 5,425,000. The annual production of more than 600 million chickens on the Delmarva Peninsula (the Chesapeake Bay tri-state area) yields over 3.2 billion pounds of raw waste each year, 13.8 million pounds of phosphorous, 48.2 million pounds of nitrogen—as much nitrogen as in the waste from a city of 490,000 humans. The 1,600 dairies in the Central Valley of California alone produce more waste than a city of 21 million people.

In his book, Diet for a New America, John Robbins calculates that human waste is produced at 25,000 pounds per second, compared to the 250,000 pounds per second produced by farm animals.

Animal waste permeates our water supply in several ways. When manure is applied to crop land in amounts greater than it can be used or retained by the soil, nitrogen, phosphorous and other nutrients leach into surface and ground water. Leaching from earthen waste storage lagoons may also pollute ground water. Following a disastrous series of spills in North

Carolina three years ago, researchers examined manure lagoons across the state and found that half of them were leaking manure.

Spills of liquid animal waste directly into water have an immediate environmental impact—they choke to death fish and other aquatic life by depleting oxygen in the water. An informal study of leading livestock-producing states indicates that state enforcement actions taken in response to spills or discharges nearly doubled between 1992 and 1995.

In Iowa, Minnesota and Missouri (accounting for 36 percent of hog production), recorded animal waste spills rose from 20 in 1992 (killing at least 55,000 fish) to more than 40 in 1996 (killing at least 670,000 fish).

Animal waste consists not only of manure and urine, but also of dead animals, used bedding, waste feed, and other residual organic matter. Poultry operations typically produce dry litter, with about 15-25 percent moisture content, that may be mixed with straw or another dry material for easier handling. The removed litter is stacked and stored in metal or wooden structures, or on the ground on a temporary basis.

Hogs and cattle generate a manure that is more liquid, and typically water is used to flush the manure out of the barns and into storage facilities. The resulting "slurry" is up to 97 percent liquid, and most commonly stored in earthen lagoons—which, as we've seen, are prone to leakage. Even the best recycling systems, however, do not follow the environmental standards associated with the treatment of human waste.

Current attention is focused on the direct impacts of animal waste on aquatic ecosystems, but there are also human health concerns associated with animal waste pollution that should be studied further. Manure contains pathogens to which humans are vulnerable, including Salmonella and Cryptosporidium, and can pollute drinking water with nitrates, which are potentially fatal to infants.

More indirectly, microbes that are toxic to animals and people are thought to thrive in waters that have excessively high levels of nutrients from sources including animal waste pollution. As an example, the annual litter from a typical broiler house of 22,000 birds contains as much phosphorous as in the sewage from a community of 6,000 people.

Nationwide, the U.S. produces 7.6 billion broiler chickens. It also produces 300 million turkeys, 103 million hogs, and 58 million cattle. Thirty years ago there were more than one million hog farms across the country. Over the past 15 years, the number of hog farms has dropped from 600,000 to 157,000—yet the country's hog inventory has remained about the same. What that means is that just 3 percent of the nation's hog farms produce more than 50 percent of the nation's hogs. As well, two percent of cattle feed operations account for more than 40 percent of all cattle. Between 1969 and 1992, the number of farms with broiler houses fell by 35 percent—but during the same time, production nearly tripled.

In essence, the waste has increased—and in concentrated, unmanageable amounts.

Last year, Vice President Al Gore directed the Environmental Protection Agency and the U.S. Department of Agriculture (USDA) to work together to develop the Clean Water Action Plan. The Plan cited animal waste as the leading cause of water pollution, and it called for increased inspections of

operations and stepped-up enforcement against polluting operations.

During the same time, U.S. Senator Tom Harkin (D-IA) introduced the Animal Agriculture Reform Act (S. 1323). The bill calls for national environmental standards for the handling of waste by large animal feeding operations. It also seeks to provide a directive for USDA to implement waste management standards on individual farms.

Animal waste pollution is a national problem, and current Federal regulations are inadequate solutions. There are no regulations at the national level that set specific requirements for the storage or application of manure, nutrient management, animal waste management plans or construction standards. Comprehensive national standards for animal waste management, such as those set forth in the Animal Agriculture Reform Act, are an important step toward improving water quality across America.

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